

RAILWAY WEATHER SIGNALS.

Prof. P. H. Mell, jr., director of the "Alabama Weather Service," in the report for March, 1886, states:

The verifications of predictions for the whole area was 88 per cent. for temperature, and 85 per cent. for weather.

The following corporations comprise this system: South and North; Montgomery and Mobile; Mobile and Girard; Georgia Pacific; East Tennessee, Virginia and Georgia system in Alabama; Memphis and Charleston; Columbus Western; Atlanta and West Point of Georgia; Northeastern of Georgia; Western and Atlantic; East Tennessee, Virginia and Georgia system in Georgia; Montgomery and Eufaula; Pensacola and Selma; Pensacola and Atlantic; and the cities of Milledgeville, Georgia, and Talladega, Alabama.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroral displays occurred during the month, as follows:

Saint Vincent, Minnesota: an aurora was observed at 10.15 p. m. of the 3d, extending from 165° to 270° azimuth, with an altitude of from 15° to 20°. It consisted of a pale diffused light, without any perceptible motion, and continued until after midnight.

Eastport, Maine: a faint auroral light was observed from 9 to 10 p. m. of the 7th.

Saint Vincent, Minnesota: an aurora was observed about 10° to the west of the northern horizon at 10.20 p. m. of the 9th, extending over 40° of azimuth, with an altitude of 15°, consisting of pale yellow beams of light, which rose and fell at irregular intervals, being apparently drawn to and repelled from the magnetic zenith. The aurora was still visible at midnight, but had diminished greatly in intensity, and disappeared during the early morning of the 10th.

Fort Totten, Dakota: an auroral light was observed from 8.40 to 11.50 p. m. of the 21st, having an altitude of 15° and azimuth 100°; at 9.40 p. m. it assumed an arch formation above a dark segment, which disappeared at 10.10 p. m. Shooting beams were also observed.

Mackinaw City, Michigan: a faint auroral light was observed at 8.30 p. m. of the 26th, of 90° azimuth and 20° altitude; the display continued until the early morning of the 27th.

Fort Buford, Dakota: an aurora was observed at 9.25 p. m. of the 26th, continuing until the early morning of the 27th, consisting of arch of a whitish color of about 15° altitude, and extending from northwest to northeast; streamers, of a reddish tinge, having an upward and lateral motion, would rise to an altitude of about 30° above the arch.

Marquette, Michigan: a faint auroral arch was observed from 10 to 11.30 p. m. of the 26th, having an altitude of 20° and extending over 120° of azimuth.

Saint Vincent, Minnesota: at 10.43 p. m. of the 26th an aurora was observed in the northern horizon; the tints were very beautiful, and varied from an emerald green to a lemon color. The arch upon which the aurora rested was clearly defined, but presented an undulating appearance during the early stage of the display, changing gradually until at the period of maximum brilliancy it formed a perfect segment, from behind which the light shot upwards in broad tapering bands to a height of 45°. When several of these streamers would surge upwards simultaneously, the light was so intense that objects would cast a shadow, and when disappearing, the whole northern quarter would glow with a pale green hue. No marked exhibition of "merry dancers" was observed in connection with this display, the light being thrown upwards in a succession of phenomenally brilliant waves and disappearing so rapidly as to apparently leave a nebulous cloud floating in the atmosphere. No corona or glory was formed. The aurora continued until 2.10 a. m. of the 27th, and during its prevalence extended from 165° to 210° azimuth, with an altitude of 45°.

Escanaba, Michigan: an aurora was observed from 9 p. m. to midnight of the 26th, consisting of a diffused pale yellow light, resting upon a narrow dark segment.

Alpena, Michigan: an aurora was observed from 10 to 11.30 p. m. of the 26th, consisting of a diffused light, resting on a dark segment in the northern horizon.

Eastport, Maine: an auroral light of a whitish color was observed from 6.45 to 11 p. m. of the 26th.

Mackinaw City, Michigan: a faint auroral light was observed from 9.10 to 11.40 p. m. of the 27th, of 50° azimuth and 20° altitude.

Escanaba, Michigan: a faint aurora was observed from 10.10 to 11.41 p. m. of the 27th, having an altitude of 15°.

Gardiner, Kennebec county, Maine: a brilliant aurora was observed at 8 p. m. of the 28th; previous to 9 p. m. beams were observed to shoot up from a dark cloud, after which hour the aurora gradually faded away, and before 11 p. m. had entirely disappeared.

Fort Bidwell, California: a brilliant aurora was observed in the north from 2.15 to 3.20 a. m. (local time) of the 30th, consisting of two distinct parallel arches, the upper arch having an altitude of 25° and extending over 20° of azimuth; the extremities of either arch did not approach within 3° of the horizon. The lower arch was well defined and of a dark red color, resting on an extremely black base; the upper arch was a bright red, its upper edge being poorly defined and blending with the straw color of the atmosphere between it and the zenith. Several luminous beams, having a lateral motion, were observed to shoot up from the lower arch, but owing to the rapidity of their movement, it was impossible to ascertain their altitude with any degree of accuracy.

Saint Paul, Minnesota: a faint auroral display was observed from 10.03 to 11.45 p. m. of the 30th, consisting of a pale white light above a dark slate-colored bank, and extending from 170° to 200° azimuth, with an altitude of 20°.

Yankton, Dakota: a faint aurora was observed from 9.40 to 10.45 p. m. of the 30th, consisting of an arch of white light with three streamers, having an altitude of 20° and extending from 195° to 250° azimuth.

Port Angeles, Washington Territory: an aurora was observed during the evening of the 30th, the time of beginning and ending not being known. It had the form of an arched band of yellow light about 4° in width, with an altitude of 25°, and extending about 45° east and west of the magnetic meridian. The segment was well defined and very dark, with an altitude of about 20°.

Duluth, Minnesota: a very bright aurora was observed from 4 a. m. to daylight of the 30th, consisting of bright, straw-colored beams often passing the zenith, and with an occasional lateral motion.

Bismarck, Dakota: an auroral light of a pale yellow color, above a dark segment 2° in altitude, was observed from 9.45 to 11.30 p. m. of the 31st, extending from 136° to 226° azimuth, with an altitude of 10°.

Poplar River, Montana: a brilliant aurora was observed from 2.30 to 4.30 a. m. of the 30th, and from 10 p. m. of the same date to 3 a. m. of the 31st, the latter display consisting of a diffused light of a pale straw color.

Fort Buford, Dakota: an aurora was first observed at 10.20 p. m. of the 30th, consisting of an arch of diffused white light, resting on a dark base and extending from northwest to northeast, of about 35° altitude; streamers of a bright white color rose from the northwestern portion of the arch between 10.48 and 11 p. m., reaching, at their maximum, about 60° in altitude. The arch grew fainter after 11 p. m., and entirely disappeared at 11.40 p. m.

Fort Buford, Dakota: an aurora was observed from 9.52 to 11.55 p. m. of the 31st, consisting of a diffused whitish light, forming an irregular arch of 25° in altitude, and extending from northwest to northeast. No dark segment was observed, as the light extended to the horizon, the northern portion being much brighter than the extremities.

Grand Forks, Grand Forks county, Dakota: a moderate auroral arch was observed on the 31st, extending from northwest to northeast, with numerous streamers of a pale white and greenish tint, shooting upwards to an elevation of 45°.

Auroral displays were also observed during the month, as follows:

4th.—Windsor, Illinois.
 5th.—Kent's Hill, Maine.
 6th.—Eastport and Kent's Hill, Maine; Fort Totten, Dakota.
 10th.—Pekin, Illinois; Manistique, Michigan.
 11th.—Manistique, Michigan.
 12th.—Wakefield, Kansas; Manistique, Michigan; Garrettsville, Ohio.
 15th.—Pekin, Illinois.
 16th.—Pekin, Illinois; Tiffin, Ohio.
 17th.—Pekin, Illinois.
 18th.—Gardiner, Maine.
 19th.—Dover, New Jersey.
 21st.—Webster, Dakota; Dover, New Jersey.
 22d.—Escanaba, Traverse City, and Manistique, Michigan; Embarras, Wisconsin.
 24th.—Moorhead, Minnesota.
 26th.—Fort Totten, Dakota; Saint Vincent and Bird Island, Minnesota; Traverse City and Manistique, Michigan; Berlin Mills, New Hampshire; Gardiner, Orono, Cornish, and Kent's Hill, Maine; Embarras, Wisconsin.
 27th.—Marquette, Michigan; Fort Benton, Montana; Kent's Hill, Maine.
 28th.—Eastport, Orono, Cornish, and Kent's Hill, Maine; North Colebrook, Connecticut; Nashua, New Hampshire; Lunenburg and Poultney, Vermont; Cambridge and Fall River, Massachusetts; Mountainville and Plattsburg Barracks, New York; Manistique, Michigan.
 29th.—Berlin Mills, Vermont.
 30th.—Walla Walla, Washington Territory; Fort Benton, Montana; Fort Totten and Webster, Dakota; Moorhead and Bird Island, Minnesota.
 31st.—Poplar River, Montana; Webster, Dakota; Bird Island, Minnesota.

THUNDER-STORMS.

Thunder-storms, with time of beginning, when given by the observer, were reported in the various states and territories, as follows:

Alabama.—Of general occurrence throughout the state on the 20th, and from the 27th to 30th.

Arkansas.—Little Rock, 11.25 p. m., 11th; 4 p. m., 16th; 29th. Fort Smith, 3.40 p. m., 16th; 10.45 p. m., 19th; 10.10 a. m., 28th. Lead Hill, 20th, 26th, 28th.

California.—Cahuenga, 11.07 a. m., 1st. Murietta, 1st. San Diego, 4 a. m., 1st; 2 a. m., 3d. Fall Brook, 4 p. m., 1st; 18th. Poway, 1st, 2d. Sacramento, 7.20 p. m., 4th. Los Angeles, 5.45 p. m., 5th.

Connecticut.—North Colebrook, 19th. New London, 10.55 a. m., 19th; 20th. New Haven, 10.27 p. m., 19th; 12.48 a. m., 20th; 9.10 p. m., 31st. Waterbury, 20th. Bethel, 20th, 31st.

Florida.—Archer, 3 p. m., 12th; 8 a. m., 16th; 6 a. m., 19th; 28th; 31st. Cedar Keys, 7.30 p. m., 12th; 1 a. m., 31st. Key West, 6.50 p. m., 9th; 22d. Merritt's Island, 12th, 13th, 14th, 17th, 21st. Limona, 13th, 14th; 4 a. m., 21st. Fort Gatlin, 14th. Sanford, 7.45 a. m., 13th; 21st. Pensacola, 20th, 28th, 30th; Jacksonville, 5.12 a. m., 31st. Tallahassee, 30th; and of general occurrence throughout the state on the 20th.

Georgia.—They were reported by numerous stations throughout the state on the 20th, 29th, and 30th, and at Savannah on the 31st.

Illinois.—Of general occurrence from the 17th to 20th, and on the 28th; also reported at Cairo on the 29th.

Indiana.—LaGrange, 18th; Lafayette, evening, and Fort Wayne, 4 a. m., 19th. Vevay, 1.30 a. m., and Sunman, 1 a. m., 29th; and from all sections of the state on the 20th and 28th.

Indian Territory.—Fort Reno, 3.35 p. m., 8th.

Iowa.—Of general occurrence on the 17th and 19th; also reported at Cresco, 10.15 p. m., and Monticello, 4 p. m., 18th. Oskaloosa, 20th. Davenport, 4.50 p. m., 18th; 12.45 a. m., 20th.

Kansas.—Ninnescah, 4.15 p. m., 4th; 2.55 p. m., 11th; 25th. El Dorado, 6.30 p. m., 11th. Yates Centre, 5.15 p. m., 11th;

7 p. m., 19th. Wellington, 11th, 28th. Fort Scott, 6.45 p. m., 11th; 6 p. m., 19th. Leavenworth, 18th. Wyandotte, 5 p. m., and Independence, 6 p. m., 19th.

Kentucky.—Frankfort, Richmond, 6.15 p. m., and Louisville, 5.15 p. m., 20th. Penrod, 28th.

Louisiana.—Grand Coteau, 4th, 27th, 28th, 29th, 30th. New Orleans, 3.20 a. m., 3d; 20th; 9.20 p. m., 29th; ended 3.15 a. m., 30th. Shreveport, 20th; 4.16 p. m., 26th. Luling, 29th, 30th.

Maine.—Portland, 2.15 a. m., and Gardiner, 3.45 a. m., 22d.

Maryland.—Fallston, 21st, 30th, 31st.

Massachusetts.—Amherst, 20th. Deerfield, 21st. Blue Hill, 22d. Somerset, 31st.

Michigan.—Of general occurrence throughout the state on the 18th, 19th; and at Escanaba, 7.38 p. m., 17th. Lansing, Pentwater, Port Huron, and Grand Haven, 12.02 a. m., 20th.

Minnesota.—They were reported from all stations on the 17th; and at Spring Valley, 18th. Albert Lea and Dodge City, 20th.

Mississippi.—Vicksburg, 5.10 p. m., 28th; ended 11.30 a. m., 29th.

Missouri.—Lamar, 10.20 p. m., 19th; 20th; 4 a. m., 28th. Carthage, 19th, 26th. Centreville, 20th, 28th, 29th.

Nebraska.—Marquette and Genoa, 18th. De Soto, 19th.

New Hampshire.—Nashua, 2.30 a. m., 22d.

New Jersey.—Of general occurrence on the 21st and 31st; and at Sandy Hook and South Orange, 19th. Dover, 3.15 p. m., 19th; 2 a. m., 20th.

New York.—Of general occurrence on the 19th, 20th; and reported at West Point, 29th, 31st; Mountainville, 9 p. m., and Setauket, 10 p. m., 30th; 8.30 and 9.30 p. m., 31st.

North Carolina.—Charlotte, 12.15 p. m., and Wilmington, 8.30 p. m., 20th; and of general occurrence on the 30th, 31st.

Ohio.—Wauseon, 19th, 20th. Napoleon and Jacksonborough, 20th. West Milton, 20th, 21st. Cincinnati, Ruggles, and Garrettsville, 7.10 a. m., 29th.

Pennsylvania.—Of general occurrence throughout the state on the 19th and 21st; and reported at Grampian Hills, 6 p. m., and Pittsburg, 8.07, 18th. Blooming Grove and Quakertown, 20th, 30th, 31st. Bethlehem and Zionsville, 7 p. m., 30th. Philadelphia, 6.40 p. m., 31st.

South Carolina.—General on the 20th; and reported from numerous stations on the 29th, 30th, 31st.

Tennessee.—They were reported from numerous stations on the 20th, 28th, 29th, and 30th.

Texas.—Silver Falls, 3d. Comfort, 2d, 3d, 15th, 26th. New Ulm, 3 p. m., 2d; 8.30 a. m., 4th; 3 a. m., 12th; 9.15 a. m., 16th; 10.30 p. m., 19th; 4 p. m., 26th. San Antonio, 3 p. m., 3d; 11.25 p. m., 11th; 16th; 10.12 a. m., 26th. Abilene, 7.30 p. m., 6th; 11.25 p. m., 15th; 11.10 a. m., 26th; 5.20 a. m., 28th. Corsicana, 1.30 a. m., 16th; 8 p. m., 19th; 6.30 a. m., 29th. Fort Stockton, 25th. Galveston, 27th.

Virginia.—Of general occurrence on the 30th, 31st.

Washington Territory.—Bainbridge Island, 13th.

West Virginia.—Parkersburg, 8 a. m., 20th. Helvetia, 30th.

Wisconsin.—General throughout the state on the 17th, 18th, 19th; also reported from numerous stations on the 20th, and at Manitowoc, 24th.

ATMOSPHERIC PHENOMENON.

The following is taken from the La Crosse, Wisconsin, "Daily Republican," of March 20, 1886:

OSHKOSH, WISCONSIN, March 19th.—A most remarkable atmospheric phenomenon occurred here at 3 p. m. The day was light, though cloudy, when suddenly darkness commenced settling down, and in five minutes it was as dark as midnight. General consternation prevailed; people on the streets rushed to and fro; teams dashed along, and women and children ran into cellars; all business operations ceased until lights could be lighted. Not a breath of air was stirring on the surface of the earth. The darkness lasted from eight to ten minutes, when it passed off, seemingly from west to east, and brightness followed. News from cities to the west say the same phenomenon was observed there in advance of its appearance here, showing that the wave of darkness passed from west to east. Nothing could be seen to indicate any air currents overhead. It seemed to be a wave of total darkness passing along without wind.